

CLAIMS

1. An apparatus for distributing a liquid in an exchange column, comprising:

a plate having at least one elongated channel, the channel having a first longitudinal axis, a bottom, and at least one aperture in the bottom; and

at least one elongated internal baffle having a second longitudinal axis substantially parallel to the first longitudinal axis, at least a substantial portion of the internal baffle being disposed in the channel.

2. An apparatus as in claim 1, wherein a part of the internal baffle is adjacent the aperture.

3. An apparatus as in claim 1, wherein at least a section of the internal baffle has a triangular shape.

4. An apparatus as in claim 1, wherein at least a section of the internal baffle has a zig-zag shape.

5. An apparatus as in claim 1, wherein at least a portion of the internal battle is perforated.

6. An apparatus as in claim 1, wherein the internal baffle has a plurality of edges, at least one edge having a non-linear shape.

7. An apparatus as in claim 1, further comprising a control baffle, at least a substantial portion of the control baffle being disposed in another channel having

a third longitudinal axis at an angle with the first longitudinal axis and being in fluid communication with the channel having the first longitudinal axis.

8. An apparatus as in claim 1, wherein the internal baffle has a plurality of perforations and divides the channel into generally parallel spaced apart first and second subchannels, the subchannels being in fluid communication across the perforations, wherein the first subchannel has at least one aperture and the second subchannel has a substantially fewer number of apertures than the first subchannel.

9. An exchange column for exchanging heat and/or mass between a liquid and a vapor, the exchange column having at least one apparatus for distributing a liquid in the exchange column as in claim 1.

10. A process for cryogenic air separation comprising contacting liquid and vapor counter-currently in at least one distillation column containing at least one mass transfer zone, wherein liquid-vapor contact is established by at least one packing, and wherein liquid is distributed to the packing by an apparatus as in claim 1.

11. A method for adjusting a flow direction of a stream of a liquid exiting an aperture in an elongated channel within a plate for distributing liquid in an exchange column, the elongated channel having a first longitudinal axis, a bottom, and at least one aperture in the bottom, comprising the steps of:

providing at least one elongated internal baffle having a second longitudinal axis; and

placing at least a substantial portion of the internal baffle inside the channel in a position whereby the second longitudinal axis is substantially parallel to the first longitudinal axis.

5 12. A method as in claim 11, wherein a part of the internal baffle is adjacent the aperture.

13. A method as in claim 11, wherein at least a section of the internal baffle has a triangular shape.

10 14. A method as in claim 11, wherein at least a section of the internal baffle has a zig-zag shape.

15 15. A method as in claim 11, wherein at least a portion of the internal baffle is perforated.

16. A method as in claim 11, wherein the internal baffle has a plurality of edges, at least one edge having a non-linear shape.

20 17. A method as in claim 11, comprising the further steps of:
 providing at least one control baffle;
 placing at least a substantial portion of the control battle in another channel within the plate, the another channel having a third longitudinal axis at an angle with the first longitudinal axis and being in fluid communication with the channel having the first longitudinal axis.

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18. A method as in claim 11, wherein the internal baffle has a plurality of perforations and divides the channel into generally parallel spaced apart first and second subchannels, the subchannels being in fluid communication across the perforations, wherein the first subchannel has at least one aperture and the second subchannel has a substantially fewer number of apertures than the first subchannel.

19. A method for assembling a distributor for distributing a liquid to a packing in an exchange column, comprising the steps of:

providing the exchange column;

providing the distributor, comprising

a plate having at least one elongated channel, the channel having a first longitudinal axis, a bottom, and at least one aperture, in the bottom, and

at least one elongated internal baffle having a second longitudinal axis substantially parallel to the first longitudinal axis, at least a substantial portion of the internal baffle being disposed in the channel; and

installing the distributor in the exchange column.

20. A method as in claim 19, wherein the distributor further comprises at least one control baffle, at least a substantial portion of the control baffle being disposed in another channel within the plate, the another channel having a third longitudinal axis at an angle to the first longitudinal axis of the channel.